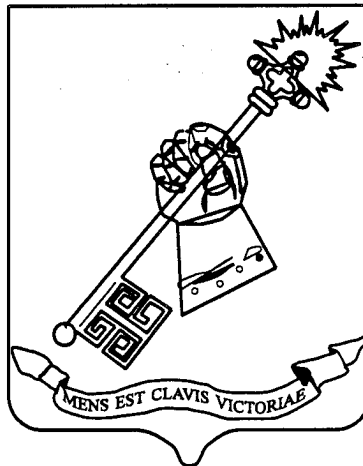


OPERATIONAL LOGISTICS, WAR, AND OPERATIONS OTHER THAN WAR: What Applies?

A Monograph
By
Major James G. Currie Jr.
Quartermaster

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School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas


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Abstract

This study assesses the role of operational logistics in a war environment and in an operations other than war (OOTW) environment by way of conducting a historical analysis of Desert Storm and humanitarian assistance operations in Somalia. A framework of campaign design elements is used to examine how operational logistics was integrated into each operation, and to what degree the design elements influenced the logistic support in the particular environment.

Three conclusions stem from the research. One, the warfighting concept of operational logistics is transferrable when supporting certain operations other than war missions. The operational logistics functions apply, regardless of the environment in which it is executed. Therefore, from a functional approach, this study supports the idea that the operational level of war is applicable to the OOTW environment. The second conclusion is the construct of applying campaign design elements as criteria for measuring the integration and application of operational logistics was tested and found to be useful. It appears this use of criteria elements can serve as a template for operational logistics efforts both in war and peace, provided the functional aspect of the design element, vice the doctrinal "pure" definition, be considered when applying it to the different environments. The final implication of this study is it reaffirms that as one progresses up the levels of war, the distinction between strategy and logistics erodes. Additionally, the peculiarities of the OOTW environment, especially as noted in the humanitarian relief efforts conducted in Somalia, are such that logistics may become the principal means of policy. This in turn, offers implications regarding the subordination of logistics to warfighting, whereby warfighting capability support logistics.

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Major James G. Currie, Jr.

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Approved by:

C O Hammond
LTC Charles O. Hammond, MS, MMAS

Monograph Director

Gregory Fontenot
COL Gregory Fontenot, MA, MMAS

Director, School of
Advanced Military
Studies

Philip J. Brookes
Philip J. Brookes, Ph.D.

Director, Graduate
Degree Program

Accepted this 19th Day of May 1995

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I. INTRODUCTION

The United States Army's primary focus is to win the country's wars. However, units frequently participate in operations where the environment is not war, but rather, are considered *operations other than war* (OOTW).¹ US Army Field Manual 100-5, Operations, contends our warfighting doctrine is applicable to OOTW conditions.² It further states that some principles, adapted to specific situations, apply to both environments.³

This distinction between the environments emphasizes their differences, yet we assume the differences are not significant enough to invalidate our warfighting concepts. This study examines one such operational level warfighting concept--operational logistics. After analysis of the concept in war and peace the study compares its application in the differing environments to determine if this concept remains useful, and if so, what should be considered in ensuring closer integration of logistics in planning future OOTW operations. The Army has participated in OOTW throughout its history, and is likely to continue. Therefore, planners may benefit if we can determine ways logistics can better support future OOTW missions.

This study proposes to assess the application of operational logistics in an OOTW environment and to comment on its unique logistical considerations. To do so, an analysis of the Operation Desert Storm ground campaign is presented in the first section to provide a benchmark for comparison. A framework of campaign design elements is used to examine how operational logistics was integrated into the operation, and to what degree the design elements influenced the logistic support. Discussion will not emphasize logistic units' performance of the specific functions we associate with operational logistics. Rather, a conceptual synthesis of these functions is presented.

Using the same methodology as above, the second section reviews the theater logistical support provided to military forces during Operation Restore Hope in Somalia. The third section comments on operational logistic support to the campaign design elements and highlights issues that may affect the integration and application of operational logistics in future OOTW operations. A discussion on doctrinal comments and their affects on providing future support is included. A final section presents the general conclusions of the study.

The Levels of War and Logistics

In the 1986 FM 100-5, the US Army adopted the strategic, operational, and tactical levels of war to clarify activities occurring at different levels within the structure of modern warfare.⁴ It is arguable that German Field Marshal Helmuth von Moltke in the 19th century began this differentiation, perhaps influenced by Carl von Clausewitz's On War. A study of Soviet adaptation of operational art in the 20th century rekindled an interest in the operational art by the American military. The US Army realized that it was the operational art which defined the military objectives that linked the political objectives of war.

At the *strategic* level, national interests are translated into military policy and requirements by the National Command Authority (NCA) and the Chairman of the Joint Chiefs of Staff.⁵ The theater commander takes these policies and requirements, determines theater goals, and develops a campaign plan providing his intent, concepts for the operations envisioned, and specific objectives for the theater. This, in turn, provides the basis for operational-level planning.⁶

At the *tactical* level, commanders are concerned with how to fight battles and

engagements. The issues at this level center around the dynamics of battlefield problem-solving, i.e., how to effectively arrange and maneuver combat forces to achieve assigned combat objectives, taking place in a rapid and dynamic environment.⁷

It is the *operational* level which links the larger national and theater goals to the tactical employment of forces on the battlefield. This occurs through the design, organization, and execution of campaigns and major operations to attain theater of war objectives and operational objectives in theaters of operations.⁸ It is the broad vision of *operational art* which translates national strategy into operational design which integrates the levels of war. Simply stated, operational art considers the ends which must be achieved, the ways the ends can be achieved, and the means--soldiers, materiel, and time--available and how best to use them.⁹

Logistics is the science of moving and sustaining forces in support of military operations.¹⁰ Like military art, it can be correlated with the tactical, operational, and strategic levels of war by the separate functions performed by strategic, operational, and tactical logistics. Operational level logistics--termed operational logistics in this study--comprises those activities needed to sustain campaigns and major operations to accomplish strategic objectives within theaters or areas of operations.¹¹ In effect, it creates the capabilities for the concept of operations and the adopted scheme of maneuver.¹² We associate the functions entailing force reception, infrastructure development, distribution, and management of materiel, movements, personnel, and health services, with this level of logistics operations.¹³ These functions form the conceptual basis for later comments concerning the integration and application of operational logistics.

Logistics and the Operational Level of War

Clausewitz makes the distinction that war, and preparing for war--logistics in a larger sense--are two separate concerns. He notes logistics is the subordinate of these dual processes by proclaiming that the whole reason a soldier to be clothed, armed, fed, and marched is simply for him to fight at the correct time and place.¹⁴ However, he is also aware of the true interaction between these functions. He emphasizes logistics delimits capabilities in war, for he defines the art of war as the art of *using the means given* for the purpose of combat.¹⁵ Logistics is only one color available on the operational artist's palette. Using all means available to him, it is the *genius*, expressed as art, which allows the commander to overcome logistical imperfections, and to keep logistics in its subordinate role. However, this subordination of logistics may only be applicable from a theoretical view, and may reverse itself as the world of reality takes over from Clausewitz's abstract thought.

One area where this reversal may be seen is in the application at the operational level. The operational commander is concerned with "employment of military forces to attain theater-strategic objectives in a theater of war and operational objectives in the theaters of operations through design, organization, and the execution of subordinate campaigns and major operations."¹⁶ Inherent in this application of assets is the necessity to ensure the operational level functions are coordinated to accomplish his goals, and the goals determined by national interests. In our ends-ways-means paradigm, operational logistics supports the ways and means available to the commander to achieve national objectives.

The theater commander's logistical support plan is normally based upon his campaign plan. As the concept of the operation is developed, a concept of support is

concurrently designed. This is in keeping with the separation of preparing for war and war itself, and the inherent subordinate relationship. But at the campaign and major operation planning level, logistics can become the dominate factor in determining the objectives, tempo, and the nature of the operations.¹⁷ Strategic deployment capabilities, concentration, and employment may deny options to the NCA and the theater commander, and affect objectives selected.¹⁸ The functions required of operational logistics require longer planning, preparation, and execution time. Additionally, the ability of the theater logistics system to absorb, or move forward the assets may affect the entry size and flow of combat force, or determine the rate of advance of operations. Further, logistics must balance current requirements with future operational needs. Because of these conditions, the commander's operational plan becomes entwined with his sustainment plan. Therefore, at this level the distinction between operations and logistics begins to erode, and indicates perhaps a co-equal role of the two.

We see these points demonstrated in Operation Desert Storm. The strategic mobility of the US made it possible to move forces rapidly into theater, while operational logistics functions quickly absorbed these elements. No doubt this affected Saddam's ambitions to continue moving south. Additionally, the air and sea port facilities were robust and provided adequate means for deploying more than one-half million soldiers and equipment. Operational logistics requirements affected the rate of advance. There is little doubt that the unit and logistics movements to the west were significant determinants for the date of General Schwarzkopf's G-day. The sustainment base which developed proved adaptive enough to support the planned invasion into Kuwait. From its limited initial capability, the support structure grew to accommodate the

additional combat forces provided to the theater. The innovative solutions to resolve sustaining the duration and depth of the offensive operations ensured the scheme of maneuver was not significantly affected by logistics shortfalls. Perhaps most important, General Schwarzkopf did not "forget logistics." Though he stressed the system, and took risks, he wanted absolute assurances his plan was logistically supportable. Therefore, we see how both operations and logistics enabled each other to achieve the theater objectives.

Another area which challenges the subordination of logistics is the conduct of operations other than war. Clausewitz posits that war is a part of policy. From this he notes that the less intense the motives for war, the more war is driven from its natural course--absolute war. The conflict may become increasingly political in character, and that policy will determine the character of the war.¹⁹ Therefore, political considerations will be more influential on the planning of the war and its campaigns.²⁰ Further, the political intent, and the means to accomplish it, may require military operations be a subordinate role.

Operations in Somalia demonstrate the political influence on military actions, the subordination of the military to external relief operations, and the elevation of logistics as well. The US political objectives centered around facilitating what were essentially civilian-run logistics operations. Additionally, by offering military support to ongoing UN humanitarian efforts, the US virtually ensured any operations it conducted would be as part of a coalition.

The UN/NGO civilian organizations process of providing humanitarian assistance can be defined just as we have militarily defined strategic, operational, and tactical logistics. Additionally, the aim of the employment of military forces was very limited, to

protect the logistics operations. Thus, from a world-wide view, Clausewitz's separation of war and preparation for war applies, but the purpose for logistics changed. Logistics became the primary reason for the military presence. Military operations--combat in a loose sense--provided the means to ensure logistics were at the correct time and place to fight starvation.

Operation Restore Hope represents logistics as a part of policy. Therefore, we might make the argument that OOTW operations, especially those involving humanitarian relief efforts, challenge the Clausewitzian subordination of logistics to war, and at least recognize it as a co-equal executor of policy. However, this application may not apply to the narrowly defined military view of logistics, that is until military forces themselves conduct humanitarian relief efforts. Restore Hope did not represent such an operation.

Campaign Design Elements and Operational Logistics

Campaign plans link missions assigned to the theater commander to the desired strategic goals within a given space and time.²¹ While commanders traditionally apply campaigns to war, they can also be used to support theater objectives in peacetime.²² After determining what conditions will achieve the strategic objectives, the sequence of actions likely to achieve these conditions, and how resources should be applied to accomplish the sequence of actions, the commander develops his campaign plan.²³

To further guide the campaign design process, the commander should consider those items or functions critical to the success of the plan. These campaign design elements are simply items for consideration when developing campaign plans. The campaign planning process is not a scientific methodology. Rather, it is a conceptual,

intellectual, and intuitive exercise.²⁴ It is, therefore, reasonable to expect that campaign design elements apply in an OOTW environment. Our doctrine, by stating our warfighting concepts can transfer to the OOTW environment, emphasizes efficiency. We will do in peace as we will do in war. However, this may require we are flexible in our concepts, vice the doctrinal precision in terminology. The alternative to this approach demands separate concepts unique to this environment; something our doctrine does not profess.

Operational logistics provides for maintaining forces and equipment essential to conducting operations that accomplish national policies. Logistics sustains the campaign by supporting the campaign design elements. Additionally, operational logistics in OOTW may require the performance of some or all of the functions ascribed to operational logistics. It is reasonable to expect that if the campaign design elements are applicable to OOTW, so to is the utility of using these measures to determine the integration and application of operational logistics in OOTW. Therefore, these elements must be understood to determine the role of operational logistics in OOTW.²⁵

Elements of the Framework

Theater Setting and Objectives. Clausewitz defines the political objective as the original motivation for war and as such defines the military objectives and the amount of effort directed towards the attainment of the political goals.²⁶ However, this supremacy of the political objective applies to the OOTW environment as well. Regardless of the environment, it is operational art which translates political objectives into military objectives within a theater. Complicating this process are the limitations or constraints imposed on the theater commander's operations. Several factors may limit the options

available to him, or at least affect the manner in which he achieves strategic goals. A finite level of resources may be provided to the commander as a result of limited political objectives. Another factor is the physical characteristics of the theater and the constraint this places on operations. Operational logistics is influenced by the same limitations or constraints faced by the theater commander. To be successful, operational logistics must be flexible and adaptive enough to accommodate these considerations.

Concept of Operations and Maneuver. The operational commander visualizes how the campaign will unfold based upon the course of action selected. His concept expresses what, where, and how the force affects the enemy.²⁷ To ensure unity of effort, his intent must be expressed and he must integrate and synchronize the available forces to accomplish assigned missions. It is important that the concept have clear objectives, and that the operational objectives are integrated with the desired strategic goals.²⁸ Further, the concept must be sustainable. Often times, logistics capability becomes a constraint on a commander's options.

At the operational level, maneuver is the means the commander uses to determine when and where to engage those elements or conditions interfering with his attainment of objectives.²⁹ In war, maneuver may be directed towards enemy forces. In OOTW, maneuver might be directed at a less tangible enemy--hunger for example. Maneuver is more than just movement of forces. It is the integrated use of forces and capabilities to keep the enemy off balance and to allow friendly commanders to leverage the terms of battle to their favor.³⁰ However, if the plan is not sustainable, maneuver will not achieve the objectives.

Intelligence and Deception. Intelligence provides the ability to see the battlefield, and to visualize the enemy's intent and capabilities. Commanders who can surmise his

opponents interests and actions can revise his course of action to accomplish his mission.³¹ Deception seeks to create ambiguity on the battlefield by misleading opponents on friendly intentions. Its object is to convince the target of the deception--the enemy commander--to make decisions he feels are correct, but are decisions which play into the strength of the opposing commander's plan.

Operational logistics supports these elements in war and OOTW. It can be a source of intelligence for the commander. However, logistic unit operations can become a source of information for the enemy regarding the capability of friendly forces, though this potential can be turned into a strength. There may be times when we desire our operations to be publicized. Additionally, this "vulnerability" of providing information also supports operational logistics deception capability. Sustainment operations can be structured to create a false capability picture, though it is difficult to hide some operations and assets that can give a true indication of sustainment capability.

Operational Fires. As traditionally defined, this element is the integrated application of air, sea, and ground firepower to achieve a decisive effect on an operationally significant objective.³² As such, they can have a significant influence on the design of campaigns and major operations in war and OOTW environments. To create these effects we use lethal and nonlethal means of delivery. Logistics supports the creation of lethal effects by providing the required ordnance. Additionally, it supports the nonlethal effects we want the fires create as well.

A point can be made that "logistics" is a means of delivering decisive nonlethal operational fires effects, especially in the OOTW environment. One example is the air dropping of food to displaced civilian locations. Another example might be the use of Special Forces medical teams to make a population more receptive to the introduction of

military forces into an area.

Reserves. At the operational level this involves the planned use of forces at a future time.³³ These forces are critical assets for the commander to use in determining the outcome of battle. Their use is dependent on the commander correctly visualizing the decisive place and time for their commitment. Forces may be designated as reserves, or reserves may be created from on hand assets. Operational logistics supports this element by conducting operations that provide assets to the reserve force, or by placing the force in the appropriate location for quick employment.

Overview

It is reasonable to expect military forces to continue conducting operations in situations where the conflict levels may vary. The possible conflict environments range from war to humanitarian assistance operations. This study assesses the application of operational logistics in OOTW and comments on unique logistical considerations in the OOTW environment. Operation Desert Storm and Operation Restore Hope serve as examples to measure the effectiveness of operational logistics in the different operations, and challenge the theoretical notion of the subordination of logistics. The elements of the framework will also provide a basis for considerations in integrating logistics into the planning process for future OOTW operations.

II. Operation Desert Storm: Application of Operational Logistics In War

This section examines operational logistics in Desert Storm. The discussion that follows assumes the reader is familiar with the Desert Shield/Storm campaign.

Therefore, detailed discussion of tactical operations is omitted.³⁴

The Elements

Objectives and Theater Setting. In response to the Iraqi invasion of Kuwait the United States developed four policy objectives: security and stability of Saudi Arabia and the Persian Gulf, complete and unconditional withdrawal of Iraqi forces from Kuwait, restoration of the legitimate Kuwaiti government, and safety of American citizens in the area.³⁵ These four strategic objectives led General Norman Schwarzkopf, the theater commander, to focus his military objective on the destruction of Iraqi military forces. To accomplish this, General Schwarzkopf first had to buy time for a build up of coalition forces within Saudi Arabia.

Saddam Hussein's forces positioned along the Kuwaiti-Saudi border could continue their offensive down the coastal highway leading to the ports and airports located near Jubail and Dammam. We may never know why Iraq did not continue attacking south, but we can make some reasonable guesses. First, the "logistics tail" to support such a drive would have stretched back through Kuwait into Iraq. This tail would be vulnerable to air interdiction. Second, the United States rapidly sent combat forces to the theater in response to the August 2, 1990, Iraqi incursion into Kuwait. The first Division Ready Brigade of the 82nd Airborne Division began deploying early on 8 August and completed its arrival within a week. By 10 August, over 100 combat aircraft were in the CENTCOM theater. The first Maritime Prepositioning Ship for the Marines arrived on 16 August. Within the first thirty days, nearly 50,000 tons of supplies and over 70,000 personnel had arrived in the Gulf.³⁶ This rapid build up of combat potential would have affected an Iraqi incursion, and may have convinced Saddam Hussein to reconsider further attacks south. A third possibility is that he never planned to attack Saudi Arabia.

While it is speculation to guess why Iraq stopped, one thing is clear. The strategic mobility and operational logistics capability to receive the forces and materiel facilitated the initial defense of Saudi Arabia.³⁷

Combat potential and the application of military force is largely determined by the logistics sustainment capability within a theater. This capability is affected by two factors. First, the nature of the theater and the resources it provides determine what type of logistic assets are needed to support planned. The second factor is the need to conform to and support the operational concept of the operation. As noted above, General Schwarzkopf first needed to defend before he could fight. These factors dictated the establishment of the theater sustainment structure and the reliance on host nation support.³⁸

A review of the map--figure 1--indicating the sustainment network established to support the ground operations in the Gulf gives an indication of the support distances. Within Saudi Arabia alone, the network would extend roughly 400 miles east-west and 300 miles north-south when fully developed. Initially, theater logisticians had to receive, stage, and move forward the large amount of supplies and personnel as they arrived. The initial sustainment problems were made more difficult by the strategic decision to deploy "minimum essential force."³⁹ The effect of this limitation was that structural cuts for forces deployed into theater were absorbed by the sustainment forces. General Schwarzkopf accepted risk in that early arriving combat forces had to maintain themselves under austere conditions. This decision was also predicated on the assumption that defensive forces required a comparatively smaller logistics base, and that any shortfalls could be overcome by using host nation support.⁴⁰ The risk involved with this decision revolved around two considerations. First, there was no host nation

agreement or plan initially. Second, the Saudi reliance on third-country contractors for labor. Whether these contractors would remain should war begin was problematic.⁴¹

Saudi Arabia was able to provide food, water, fuel, and shelter to the eventual 540,000 personnel in theater. Perhaps more significant was their ability to provide trucks, heavy equipment transports, lowboys, and fuel carriers necessary to sustain the heavy armored fighting force which deployed to the theater. It has been said that in operational art the offense depends upon transportation to support large units for continuous movement throughout the operational depth of the enemy forces.⁴² The heavy transports available within the theater became the skeleton which gave form to the concept of operations and scheme of maneuver for Desert Storm.⁴³

Concept of Operations and Maneuver. Shortly after the conclusion of the ground operations in the Persian Gulf, General Schwarzkopf, in his "mother of all briefings," explained his general concept of operations.⁴⁴ He first had to deter Iraq from making further attacks south, and then to build up adequate forces with which to defend Saudi Arabia. While plans were developed to conduct offensive operations to force Iraq to withdraw from Kuwait, it became clear that in order to ensure success for a coalition offensive option, additional military forces would be required.⁴⁵ Approval to deploy another US corps to the region was granted in early November 1990. This additional force provided General Schwarzkopf with the additional combat forces needed for his planned "left hook" envelopment of the Iraqi forces in Kuwait. Throughout this deter-defend-offensive phasing of the operation, the logistical plan would evolve.

Initial logistics efforts focused on building up the force. Every day that Saddam Hussein delayed attacking allowed time for the logistic sustainment capability of the theater to grow. As the buildup continued, logistics "figured prominently in the evolving

concept of operations for the campaign.”⁴⁶

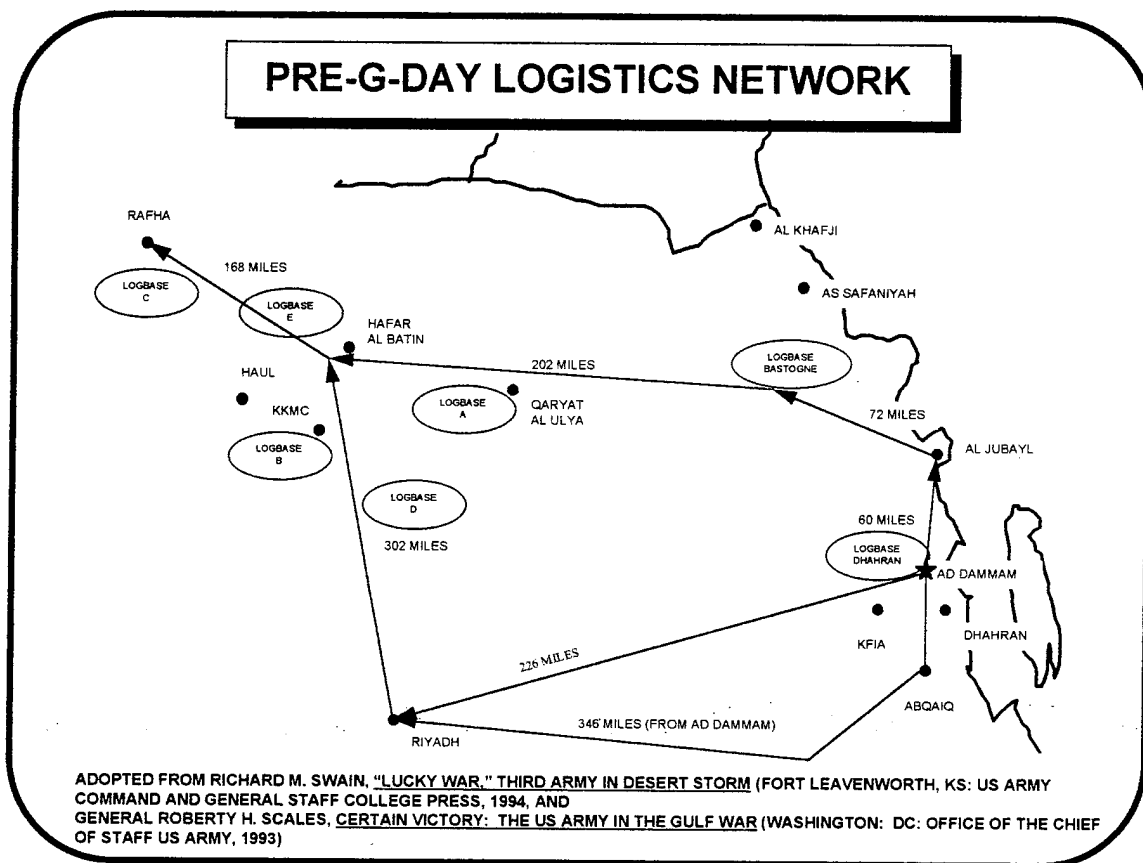


Figure 1, Pre-G-Day Logistics Network

Two operational logistics concepts developed to support Schwarzkopf's eventual offensive concept. First, it was necessary to establish logistics bases to support the forces.⁴⁷ The placement of these logistics bases was dependent upon three factors. One was the initial placement of units as they arrived in Saudi Arabia. A second factor was the positioning of units prior to the ground offensive. The final factor was the logistician's determination of where best to support the forces from forward locations to minimize transport distances as the combat forces attacked north. Eventually, seven logistics bases would be established to meet these requirements.

The second operational logistics scheme of support involved the movement of the XVIII Airborne Corps and the VII Corps from their initial locations to their pre-G-day positions.⁴⁸ The "left hook" zones of attack for the respective corps required not only for them to move westward, but also for XVIII Airborne Corps to move from the east to the west flank of VII Corps.⁴⁹ XVIII Airborne Corps would move some 500 miles, while the VII Corps jumped over 330 miles westward.⁵⁰ This task was further complicated by the necessity to hide this movement from the Iraqis.

Intelligence and Deception. On December 27, 1990, General Schwarzkopf briefed the Secretary of Defense and Chairman of the Joint Chiefs of Staff on his plan to attack around the end of the Iraqi defensive line. Near the end of the briefing, the General noted that until the United Nations 15 January deadline for Iraqi forces to redeploy from Kuwait, there was to be no movements westward.⁵¹ General Schwarzkopf made a point emphasizing the linkage of operational logistics and the intelligence and deception design elements of his campaign in response to a request to begin movements of logistics bases earlier than the deadline. "That's not possible. The entire plan hinges on surprise and deception. If you start relocating your log bases tomorrow, we'd run a great risk on being detected. Hussein would shift his defenses westward. Or worse, he'd order his forces to attack before the deadline and preempt our strategy."⁵²

General Schwarzkopf clearly did not want the operational logistics plan to telegraph the concept of operations to the Iraqi's. The key to the success of the planned "left hook" was for the Iraqi's to believe the coalition planned a land assault up the Kuwaiti coast, with a supporting attack up the Wadi Al Batin, in coordination with a amphibious assault from the Persian Gulf. However, to set the conditions to portray this

offensive scheme, it was necessary to blind the enemy with air attacks.⁵³ The enemy command and control and intelligence apparatus had to be crippled. Once this was accomplished, General Schwarzkopf could use the agility and combat power of the two American corps to outflank the Iraqi positions. Once this occurred, the Iraqi operational reserve, the Republican Guard, could be cut off and destroyed.

General Schwarzkopf knew if the logistics bases were established in the west before the enemy was blinded, the movement could be seen, and the enemy would reposition forces to counter the allied attack. Therefore, his solution was to delay the unit movements and logistics buildup until the air strikes were successful. Once the air operations started, the logistics buildup started, and the two corps moved into their forward positions in the west.

The sheer magnitude of moving two malpositioned corps and building the necessary supply stockpiles further aided the CENTCOM deception efforts. On 29 December, 22d SUPCOM briefed General Schwarzkopf concerning the concept of support for the offensive option. The simultaneous movements and building of logistics bases was expected to take 21 days to complete.⁵⁴ This briefing was a turning point regarding the feasibility of the "left hook" option. Once the theater logistician, Lieutenant General William "Gus" Pagonis gave his personal assurance his plan would work, senior commanders came to believe that if everything worked together as planned, the logisticians could support the maneuver plan.⁵⁵ During the briefing, almost as an aside, General Schwarzkopf commented that if the allied commanders "were skeptical about the plausibility of the logistical effort in supporting the concept of operations, the enemy would be skeptical as well."⁵⁶

To hide the logistics efforts, the concept of logistic base development proceeded

in two phases. First, the facilities in the eastern province were used, especially in the vicinity of the ports and airfields near Dammam and Al Jubail. Facilities in King Kahlid Military City were sparingly used.⁵⁷ Logistic base Bastogne was built to support XVIII Airborne Corps. After VII Corps arrival in theater, logistic base Alpha was added. Because of the necessity to delay the buildup in the west, the second phase was delayed until the start of air operations. Commencing on 20 January, 1991, construction was started on logistic bases Bravo, Echo, and Charlie.⁵⁸ At its highest rate, this massive move required an average of eighteen trucks a minute to cross a single point along the MSR in the north--Tapline Road.⁵⁹

Operational Fires. In terms of tonnage required for movement planning, the most significant item was the amount of ammunition required to support the planned fires. For example, the air force planned to use 2,500 tons of ordnance in just the first twenty-four hours of the air operations.⁶⁰ Just to stock twenty-one days of ammunition to support the two corps efforts in the west, 294,000 tons of materiel--about 17,850 round-trip truckloads--were needed.⁶¹

Combat units carry a quantity of ammunition on-board the fighting systems and in organic supply vehicles to support their initial needs. However, the anticipated ammunition usage rates and the distances the combat forces would move from the logistics bases was such that keeping the forces supplied was seen as a significant problem. It was necessary for ammunition stocks to be uploaded on trailers to keep up with the combat forces. Mobility of the ammunition stocks was absolutely critical.

Prior to the ground offensive, it was thought that forward logistics bases would need to be built in Iraq. This would minimize the total round-trip distances for transportation of all types of supplies. However, two factors worked against establishing

these forward supply bases. First, the pace of the offense prevented log bases from being established. A pause in the operational maneuver, or at the least a drastic reduction in the rate of movement would be necessary to give the logisticians time to move the massive amounts of supplies forward. Neither of these options were acceptable.

The second factor was limited transportation capability, even though thousands of host nation vehicles were contracted.⁶² Ammunition stocks were uploaded on trailers and accompanied the combat force's support elements as they crossed the line of departure. This prevented the trailers from being used again in round-trip operations. Trailers became critical assets for logisticians and tacticians. The limitation of trailers meant "some tactical units operated at the edge of the logistical envelope."⁶³

The end result of this was there were few trailers available to move supplies forward. Later, as the trailers accompanying the combat forces were returned, it was a matter of "too few, too late" to begin building supply stocks forward. All this demonstrates that while mobility was significant to supporting the operational fires concept, it was not without its problems.

Reserves. As part of the deception effort, the First Cavalry Division conducted the feint up the Wadi Al Batin approach into Kuwait. However, General Schwarzkopf soon called upon the unit to lend its weight to the combat forces concentrated to attack the vaunted Republican Guard forces. It was the operational logistics capability within the theater which provided the capability to reuse this force.⁶⁴ In essence, operational logistics provided a capability to create a reserve force.

Normally, this practice is concerned with the reconstitution of units. Within the theater, a weapon system replacement plan had been developed to support such

actions. These assets, along with provisional units for forward area support, were created to provide reinforcements, if required.⁶⁵ Fortunately, in the case of the First Cavalry Division, such extraordinary logistics efforts were not needed. The division only required tactical refuel and rearm actions--tactical logistics efforts to conduct its follow on mission. However, there was a capability in theater to "create or reconstitute units where needed."⁶⁶

This section focused on emphasizing how operational logistics support operations during war. Throughout operations in the Persian Gulf, logistics was integrated into the concept of the operations, and proved to be the foundation for the successful planning and execution of the war. This review establishes a baseline for evaluating the effectiveness of the integration and execution of this level logistic support as we have traditionally thought of this support.

III. Operation Restore Hope: Application of Operational Logistics In OOTW

Under United Nations (UN) sanction, a US-led multinational organization conducted operations to provide humanitarian assistance and to restore order in southern Somalia. This section covers the US military operational logistic actions taking place during the United Nations Operations in Somalia (UNOSOM). It does not examine the more recent military operations, such as those undertaken in support of UNOSOM II. As before, detailed discussion of tactical operations is omitted.

The Elements

Theater Setting and Objectives. Somalia in 1992 was a country ruled by some

fifteen clan and sub-clan tribal militias who inflicted violence and death on the population already suffering mass starvation and civil unrest. To reduce the chaos and suffering in the country, the United Nations established the United Nations Operation in Somalia (UNOSOM) on 21 April 1992. Its purpose was to monitor the cease-fire between clans warring in the capital city Mogadishu, and to distribute humanitarian relief shipments out to the country interior.⁶⁷

In August 1992, the US initiated a separate relief effort, Operation Provide Relief, to support the UN actions that were becoming overburdened by the magnitude of the starvation problems in Somalia. US Central Command (CENTCOM) supported this operation by airlifting food shipments from non-governmental organizations (NGOs) into southern Somalia.⁶⁸ However, the warring militias looted many of these shipments, as well as other UN food shipments, before they could arrive at food distribution centers located in the countryside. Intense media coverage of the "Somalia situation" contributed to increased US domestic pressure for the country to become more involved in the humanitarian assistance efforts. In response to the increasing public demand, and a UN resolution requesting assistance, President Bush escalated the US involvement in Somalia.⁶⁹ On 25 November 1992, the US NCA offered military forces and leadership to support Somalia humanitarian efforts. The fifteen-member United Nation Security Council authorized a United States-led military force under direction of UN Resolution 794 on 3 December 1992.⁷⁰ This paved the way for President Bush to order a military effort into the country to protect the massive amounts of relief supplies arriving daily, and the UN/NGO organizations who distributed them.

Several factors influenced the reasoning regarding the feasibility of using military forces to support the operation. Military force warfighting capability could establish a

safe environment for humanitarian operations while operating under a UN mandate.

Another consideration was a military operated logistics system existed that could support the anticipated scale of the operation; an operation that would eventually involve over 38,000 soldiers from 23 countries.⁷¹ Further, the military could integrate planning, not only to support our forces, but also to assist in coordinating the relief efforts and their security. This US-led multinational operation, which began 9 December 1992 and formally concluded 4 May 1993, was called Restore Hope.

By far, the logistics sustainment capability of Somalia would be the greatest obstacle logisticians would have to overcome if they were to be successful. It was a country devoid of an infrastructure capable of providing the necessary means to support the proposed military operations. There was no electricity, water, food, economy, and most importantly, no government. The CENTCOM commander noted this challenge when he remarked, "deploying to Somalia was like going to the moon: everything needed to be brought in or built there. Every scrap of lumber, drop of fuel, and slice of bread had to be brought in from outside. From a logistics perspective, Somalia was a nightmare."⁷²

It was clear that the movement and distribution of relief supplies were critical logistical missions. However, two factors would influence these missions. One, was the limited distribution network. The Somalia transportation network was in abysmal condition. Although nearly 9,500 miles of roads supported the country's total land area, only 1,450 miles of paved roads existed.⁷³ Many of the roads and bridges were in poor condition because of the years of civil strife and governmental neglect. Somalia had two international airports, each with limited ramp space, and smaller airfields of dubious capacity dotted the countryside. Three seaports located at Mogadishu, Kismayo, and

Bardera were operational, though their capacity to receive large amounts of forces and materiel was suspect. The geographical distances of the cities from one another also complicated the transportation problem.

Concept of Operations and Maneuver. US Central Command (CENTCOM) received instructions to perform three tasks: conduct joint and combined military operations to secure major air and sea ports, to provide free passage and security of relief supply convoys, and to provide security to UN/NGOs providing humanitarian relief.⁷⁴ Once there was a secure environment for uninterrupted relief operations, CENTCOM would transfer security of the efforts over to UN peacekeeping forces. Joint Task Force (JTF) Somalia was established to assume operational control of military forces in the country. Later, the JTF would be renamed UNITAF (United Task Force) in response to the UN Secretary General's special representative in Somalia desire to reflect the UN's role in the peacekeeping operation.⁷⁵

JTF Somalia expected to remain as the operational headquarters for three to four months, after which UNOSOM would assume responsibility for operations. With this limited mission time in mind, the JTF/UNITAF established four phases to achieve the operational objectives. During Phase I, military forces would secure ports and airfields at Mogadishu and Baidoa. In Phase II, security operations would expand the area of operations, to include previously established as humanitarian relief distribution sites. Nine humanitarian relief sectors (HRS) were designated within the southern half of the country. Once these areas were under military control, Phase III operations would focus on providing security to relief convoys and relief organization operations. During Phase IV, security requirements would transfer over to UNOSOM forces.⁷⁶

The operational support plan developed around the phases of the theater

mission. Initially, Marine elements were to provide their support requirements, and establish a reception and logistics base support lodgment for the Army forces arriving. As more Army logistics elements arrived during Phase II, the theater support responsibilities would pass to Army Forces (ARFOR), under the operational control of the theater support command. This theater support would expand significantly during this phase. As the area of operations grew outward to include previously established relief centers, logistics bases in the interior would develop. Also, the influx of units, US and coalition, required a robust support structure.

Confounding this expansion was the need for a smooth transfer of theater support functions from MARFOR to ARFOR control so not to affect ongoing military operations.⁷⁷ During the conduct of Phase III operations, planners anticipated that forward support areas might be necessary to allow direct delivery of supplies to the humanitarian relief sectors.⁷⁸ In support of Phase IV objectives, units no longer needed to perform security missions would be redeployed. Additionally, US operational sustainment functions--wells, showers, latrines, contract laundry--would transfer to incoming UN peacekeeping forces. This would facilitate the handover of the security mission by allowing these forces to fall in on an existing support structure.⁷⁹

This operational support plan reflects two issues that needed resolution to sustain this humanitarian assistance operation. One was the necessity to provide logistics to the military forces in the operation. However, the force structure changed constantly throughout the planning, deployment, and mission execution phases.⁸⁰ Planners expected that missions and units assigned would rapidly change in this highly politically influenced operation. Nevertheless, this turmoil wreaked havoc on logistic plans. The need to transition the support from the earlier arriving MARFOR elements,

as well as the need to support the multi-national forces under control of the JTF/UNITAF, further clouded the issue. Additionally, the lack of infrastructure in Somalia, as well as the projected time the operation would last, dictated how the operational logistics system operated.

The second logistic issue was the need to provide support to the UN/NGO organizations operating the relief centers. To coordinate military support, nine Humanitarian Relief Centers (HRCs) were established within the southern half of the country. Civil-military teams interfaced with the various relief agencies through these centers to assist in gaining the necessary military support. Geographic distances and the limited number of ground lines of communication would require a movement management system. This led to the decision to construct a theater support command similar to that established during Desert Storm.⁸¹

Marine forces conducted amphibious operations aimed at securing the port and airfields around Mogadishu. The retention of these under US control was vital to establishing ports of embarkation to receive the follow on units. The Marine CSS element, the 1st Force Service Support Group (FSSG), provided the initial support in theater.⁸² Because of the pressing need to conduct security operations, Army combat forces, with limited support capability, deployed before many of the logistics units. The decision to deploy combat forces before logistic units entailed significant risk. The units deployed into a logistically bare-based environment and had to support themselves.

Within days, as follow on forces arrived, the FSSG had trouble in providing support.⁸³ FSSGs are not organized to support elements as large as the JTF, especially over the distances required in the area of operations.⁸⁴ Later, as more logistic elements of the JTF Support Command arrived, this shortfall in capability was

eliminated. Occasionally, lower echelon CSS units were forced to perform functions usually performed by higher level logistic units.⁸⁵ As the theater support structure became more robust, the transfer of logistics responsibility took place. This transfer, whose procedures are not specified in joint doctrine, was accomplished by direct liaison and memorandums of understanding between the services.⁸⁶ Frequently, Army CSS elements fell in on Marine facilities and equipment to facilitate the hand over and reduce Army materiel deployment requirements.⁸⁷ By 28 January 1993, the ARFOR assumed full responsibility for the theater's support.⁸⁸

Contributing to the need to expand the theater support base was the number of coalition forces supported. These forces would arrive, often unscheduled, and with varying degrees of logistics capability.⁸⁹ This created some perplexing legal problems as US law does not give military commanders the discretion to directly support coalition members.⁹⁰ Pursuant to a UN Charter's Terms of Reference, and approval by DoD and the US State Department, the US military could provide some types of supplies and services to coalition forces. However, each coalition force would arrive with different expectations and promises regarding what support the US would and would not supply. JTF/UNITAF and CENTCOM determined what supplies and services were provided, and coordinated delivery and issuance of items with the respective forces operating under the JTF.⁹¹ However, the numbers of coalition forces created a delicate problem. Logistics constraints limited the JTF/UNITAF's ability to absorb more forces.⁹² Eventually, the solution was to delay the introduction of more forces until the logistics capability improved.

Given the lack of infrastructure within Somalia, nearly all supplies and materiel arrived from outside the country. The port at Mogadishu became a logistical "center of

gravity.”⁹³ Because of the long lines of operations to the various HRCs, and a lack of organic line haul transportation in supported units, intermediate theater support bases were constructed to provide more responsive support. Building these support bases was possible because the operational tempo was relatively slow moving, and security forces usually operated from fixed locations.⁹⁴

Additionally, humanitarian relief supplies competed with military materiel for use of the limited available air and port facilities, warehouses, and road network. Though the humanitarian agencies had area, cultural, technical, and developmental expertise exceeding that which military civil affairs units could provide, there was a need to coordinate the simultaneous military and relief operations. Civil military operation center (CMOC) personnel, working through regional humanitarian relief centers (HRCs), coordinated and monitored the receipt and onward movement of relief supplies. Though a limited number of civil affairs organizations were in Somalia, they coordinated the required military assistance, and kept local community leaders, NGOs, and the Office of Foreign Disaster Assistance (OFDA) informed of military operations.⁹⁵

Intelligence and Deception. The basic civil affairs mission for Restore Hope was to minimize the civilian interference with the military actions taking place.⁹⁶ The military forces provided the security for the relief efforts. However, there were competing deception needs in this operation. From a military tactical perspective, it was necessary to conduct operations with operational security (OPSEC) in mind to deceive the various clan militias as military forces expanded the area of operations. Further, there was the need to limit supply and humanitarian relief shipment information--routes, departure times, number of military escorts--in order to protect the convoys. However, from the operational level perspective, there was a desire to provide visible indications of

UN/NGO actions relieving the "Somalia situation."

OPSEC requirements of the lower echelons won out over the need for publicity. Normal information security procedures limited the specifics of military operations to those who had the "need to know." CMOC coordination, and the personal bonds established with HRCs personnel helped develop a sense of trust between the military and the various non-military organizations. Additionally, because of the importance in receiving the relief supplies, all agencies involved took special precautions to minimize the chances that information useful to the militia clans would leak out.⁹⁷

There was intense media coverage on the Somalia operations. In the interest of recording the degree of assistance being provided, often times video coverage would concentrate at locations where relief supply receipt and distribution actions took place. While normally this coverage focused on UN/NGO operations, military logistics units were also included. Logistics operators at all levels provided information to public affairs officers to demonstrate the amount of assistance being provided.

Operational Fires. The initial threat assessment indicated that significant quantities of fire support assets were essential for both force protection and protection of humanitarian operations. However, it was soon apparent that the fire support requirement was not as great as first thought. The force deployment schedule changed to eliminate unnecessary fire support units, but much of their equipment had already shipped. This resulted in an immediate backhaul requirement for the newly arriving ships. This affected the deployment of forces and receipt of supplies because ships remained at the limited berth space longer than planned to reload the equipment.

A lack of standardized ammunition agreements between the various coalition partners complicated operational logistics support of this design element. Many different

types and varieties of munitions were required by allies, requiring munitions handlers to have a general knowledge of US and coalition ammunition. Further, as coalition units expended their basic loads, they requested additional ammunition from the JTF. This issue could not be solved within the theater. For some countries, authority to issue them ammunition fell within existing US Security Assistance programs. For others, Defense Security Assistance Agency directives requiring the President's signature were needed.

⁹⁸ After a time, Foreign Military Sales procurement procedures were established in the theater to support emergency resupply requests. ⁹⁹

Reserves. During the force entry phase of Restore Hope, no dedicated ground reserve force existed, although Marine air elements were available to instantly respond to threats. Later, as 10th Mountain Division arrived, it assumed areas of responsibility from the marine elements, releasing the Marines for other missions. Arriving coalition military forces, though often unscheduled, usually were designated as ground reserve forces until their commitment to perform security operations. Later, as the security operations transferred to UN forces--known as UNOSOM II--10th Mountain Division became the theater reserve force.

Perhaps due to the perceived low threat environment within the area of operation, there appears to have been little concern for regenerating combat power in theater. Due to the limitation of military manpower allowed within Somalia, units that support reconstitution efforts were not deployed. Additionally, materiel needed to support such operations was not brought into the theater. This decision may have been a result of two factors. One, there was inadequate infrastructure available to support such an effort. Second, if needed, additional forces could quickly deploy into Somalia. Therefore, efforts were focused on ensuring that available equipment was fully

operational. Throughout the country, logistics support elements (LSEs) provided maintenance support, training, and advice on US equipment to both US and coalition forces. Additionally, US Army Materiel Command (AMC) contractors, many of them veterans of Operation Desert Storm, provided support within Somalia, and from areas outside the theater of operations.

This section focused on emphasizing how operational logistics support operations other than war. It illustrates how military support to large-scale humanitarian assistance in a devastated area can be successful. Additionally, the review of operational logistic support provided in this OOTW environment allows us to identify critical differences in the application and execution of this level of support. These differences will be explored in the next section.

IV. Observations On Application of Operational Logistics

As the previous sections demonstrate, operational logistics, through support to various campaign design elements, supported the operations taking place in disparate environments. This section comments on the application of operational logistics in terms of support to the design elements and highlights aspects applicable to supporting OOTW operations. A consideration of the doctrinal effect of these OOTW considerations concludes the section.

Operational Logistics Support Demonstrated In War and OOTW

During Desert Storm, logistics considerations were subordinate to that of the operational commander's concept of the operation. While operational logistics provided additional capability to General Schwarzkopf, the "tyranny" of logistics also dictated the

date when ground offensive actions could begin. Lieutenant General Frederick Frank's-- Commander of VII Corps during the war--offered the warning of "forget logistics and you lose."¹⁰⁰ Throughout operations in the Persian Gulf, logistics was integrated into the concept of the operations, and proved to be the foundation for the successful planning and execution of the war. During General Schwarzkopf's briefing at the conclusion of the ground offensive, he paid a high tribute to the theater logisticians when he noted that "the logisticians faced a dauntless task and pulled off a spectacular success."¹⁰¹

Two underlying factors dictated how the logisticians achieved success. The first factor was the nature of the theater logistics capability. The limited ground lines of communication and the distances the combat forces moved away from the in-country sustainment locations placed a premium on transportation assets and led to the construction of logistic bases. Another factor was that the concept of operations remained the focal point for the integration of all logistical operations. Within the operational logistics structure, planning for sustainment changed as the scheme of maneuver evolved. Additionally, the logistics planning and execution evolved to support the deception efforts. In a sense, the air operations of the campaign were designed to not only hide the movement of maneuver forces, but to hide the much larger logistics apparatus movement as well. Once the Iraqi's were not able to "see" what was taking place across the Saudi border, the logistics operators successfully moved the combat forces and required supplies to support offensive actions. The pace of maneuver was such to obviate the need to build logistic bases in Iraq, though these bases could have been constructed had the need arisen. Lastly, operational logistics planning ensured a reserve force generation capability existed to support a future need of combat elements.

During Operation Restore Hope, political-military considerations played a

considerable role in the operation. The humanitarian assistance operations conducted by the non-governmental and UN organizations were clearly established to be the priority of effort within Somalia.¹⁰² Military operations were tailored to provide security to these civilian-run international relief efforts.¹⁰³ The various humanitarian agencies involved had the area, cultural, technical, and developmental expertise to achieve their objectives. Therefore, operational logistics focused its support to the military forces, while accommodating the relief operations.

The concept of operations, again, was the focal point for all logistical operations. While initially austere, the sustainment capability grew to support the expanding area of operations. Logistics organizations proved adaptive in conducting non-traditional missions as well as support to the other services. A nearly invisible transfer of logistics responsibility took place. Conflicts over the use of the limited infrastructure available were resolved. The logistics operators supported operations security requirements, while providing visible evidence of operations that relieved the desperate Somalia situation. Lastly, the mission imperative to provide support to the coalition partners in the operation led to innovative solutions to the many legal and bureaucratic issues.

Operational Logistics and the Campaign Design Elements

As noted previously, operational logistics functions sustain campaigns and major operations which support national objectives. The theater objectives, and the integration and synchronization of operational level campaign functions provide a means to determine the sustainment structure and organization required. Specific campaign design elements were used as to evaluate the integration and application of operational logistics support to selected campaigns and major operations.

Theater Setting and Objectives. By far, these elements had the most significant effect on the theater commander's concept of the operation and the operational support required. The specific characteristics of the theaters had a profound effect on the operational logistics structure established. This should not be a surprise as we have always professed that logistics supports military operations, and that commanders should assess resources and capabilities in the theater and tailor operations accordingly.¹⁰⁴ However, some important differences in "austerity" of the respective countries must be noted as they had an effect on the logistical sustainment operations and capabilities as a whole.

In Desert Storm, Saudi Arabia was able to furnish many of the supplies needed to feed and fuel the heavy armored force deployed. Additionally, because of their dependence on importing a significant portion of the items needed to provide goods and services to the country, the Saudi sea and aerial port infrastructure was well developed. These factors reduced the need for strategic lift to transport supplies to the theater, allowing for more strategic lift to be allocated to shipment of the warfighting materiel, while the infrastructure improved the operational logistics capability to absorb forces. Thus, the available infrastructure had a direct affect on the timing of General Schwarzkopf's theater plan. In Somalia there was a more limited capability of the infrastructure to support the operation. Because of the lack of resources, much more of the strategic lift of the US was directed towards flowing in the needed supplies. This factor, coupled with the lesser perceived threat may have influenced the decision to deploy the US 10th Mountain Division, a light division. Clearly we see how theater logistics constraints affected the rate of buildup in combat forces, and at least in Desert Storm, the timing for General Schwarzkopf's campaign plan.

The objectives established prior to introducing military forces in the respective areas of operations had a significant effect on the focus of the operational logistics operators. Desert Storm would be an offensive war because of the need to expel the Iraqi's forcibly from Kuwait. This dictated a buildup of the necessary materiel to support an attack, most notable fuel and ammunition, and the necessity of supporting US military forces deep into Iraq. The operation in Somalia would be essentially defensive in nature; protection of fixed site relief operations. These defensive operations had two effects. First, it deduced the necessity to bring in high tonnage supplies and materiel. Second, defensive operations created a reduced pace in operations and allowed the operational logistics structure to overcome shortfalls in the reception capability of the theater. Further, because the US desired a joint and coalition effort, logisticians had to plan for supporting all US services, as well as the large number of international participants. The objectives further dictated the subordination of logistics in the Desert Storm environment, and logistics primacy in Restore Hope. In Somalia, this condition led the JTF commander to grant the J4 limited tasking authority to logistic units.¹⁰⁵ This authority normally resides in the operations, or the J3/G3 area of responsibility.

Concept of Operations and Maneuver. It is easy enough to see that specifics of the theater and the objectives established for the theater influenced the general concept of operations and subsequent maneuver of military forces. In a hierarchical sense, the previous design elements established the limitations on operations envisioned by the theater commander, and the subsequent employment of his campaign design elements.

It was imperative that the infrastructure needed to receive follow-on forces be secured in both operations. While these facilities were secure in Saudi Arabia, their availability was in doubt in Somalia. However, Saddam clearly threatened our ability to

receive forces into Saudi Arabia, and therefore our initial deter-defend mission was centered around protecting the ports and airfields. We see this again in Somalia. The Marines were tasked to secure the key ports and airfields in preparation of receiving the follow-on units, as well as provide immediate security to the locations where the bulk of humanitarian supplies arrived. We see, then, that operational logistics needs dictated the initial combat missions.

In both operations we find the operational commander, in an effort to increase his options, knowingly assuming sustainment risk during the initial entry phase. This was driven by the availability of strategic lift to deploy forces into the respective areas. In the Persian Gulf, this risk was lessened by the availability of supplies and services available through the host nation. In Somalia we find a reliance on the Marine Corps forced entry capability with its accompanying logistics structure.

Operation Restore Hope illustrates some key issues for operational planners. While humanitarian assistance operations may be less demanding than conventional combat, it is a more complex operation. The commander is confronted by a more complex range of considerations which affects how he sequences operations for a campaign in OOTW. Political and economic plans must be included to ensure the military means are relevant to the theater strategy. This wider range of options may necessitate using different type forces at different times in the plan.¹⁰⁶ For example, in Somalia, combat forces were required initially to secure the lodgment. Later, logistics units were needed to support both the humanitarian relief operations and the military forces conducting security missions. Therefore, we may find that in OOTW priorities of effort may change more rapidly than in a conventional war environment.

A final point to note is the consideration that military forces may not be the lead

agency when committed to certain types of OOTW operations. Other elements could have the lead, and military forces may be committed to their support. The immediate affect of this situation is that priority of strategic logistics support to the operational level may shift to non-military agencies, which in turn, may lessen the sustainment capability within the theater.

Intelligence and Deception. It appears that intelligence support to the operation under review in these differing environments may be the same. Intelligence gathers information on assets or actions that impede or progress the commander's ability to accomplish tasks. The environments differ in the information which can be collected and the assets used to collect it. But from an operational logistics perspective, there is no evidence suggesting logistic operations are any less a capabilities indicator in the OOTW environment than in war. Further, since logistics operations may become the focus for operations, it is reasonable to expect intelligence efforts to become more interested in logistics operations.

Deception efforts are constructed to support the commander's plan or concept. This is clearly demonstrated in the Desert Storm section. Operational logistics had a significant role to play in deceiving Saddam, and it required the theater commander to find a way to hide the movement of the logistic apparatus. But in Restore Hope, we find a potential conflict between the OPSEC requirements versus the desire to conduct "open" operations. In Somalia, tactical operations OPSEC needs took precedence, but logistics operations, especially the UN/NGO run operations were widely publicized. The military logistics operations support plan will probably dictate whether its operations in an OOTW environment can be publicized. If so, logistics operations are excellent forums to project positive images of military support to humanitarian operations.

Operational Fires. In both operations, the sustainment plan emphasized the physical distribution of ordnance to support lethal fires effects. This aspect had a significant bearing on the support operations conducted. There is no evidence supporting the idea that military planners considered the use of logistics as a means to create nonlethal effects in either operation. To observe this use for logistics, one must observe the initial UN operations in Somalia. Relief operations were established in the areas of greatest need with the intent to create conditions allowing for the return of governmental control. However, the scheme of maneuver--the return of civil control--was not clearly thought out, for there was no government remaining. These relief efforts soon became targets for extortion. This, however, should not distract from the concept that logistics, and its potential to create nonlethal effects can support schemes of maneuver in humanitarian assistance operations.

Reserves. The use of this design element is determined by the perceived threat to military forces. In Saudi Arabia, the need to regenerate combat power dictated the existence of a capability to create a reserve. In Somalia, the lower perceived threat, and lack of infrastructure influenced the decision that these actions were not needed. Further, because of the availability of strategic movement assets to deliver reserve forces into the theater, one could make the point that the operational logistics responsibility supporting this design element was assumed by elements outside of the theater. While it is arguable that this campaign design element had little effect on the outcome of the operations, this in no way negates the utility of using the element in the future.

Making FM 100-5 A Reality

Overall, the observations of operational logistics in the different environments, as

evidenced by the degree of integration and influence in the selected campaign design elements, appear to indicate that there is not a significant enough difference in the operation which provided humanitarian assistance to warrant special logistics doctrine. The concept of operational logistics, as we have functionally defined it in our doctrine, applies to this particular element of OOTW. Therefore, we can conclude this concept in our warfighting doctrine is transferrable to some portion of the OOTW environment.

This comment does not mean that there are no significant issues noted in these operations which may affect operational logistics support to the theater. On the contrary, two such issues are clear: providing logistics support to a force projection Army, and supporting future joint and combined operations. These are areas deserving additional research. Further, there is evidence supporting the assertion that the operational environment, and the resulting influence on various campaign design elements, had an effect on the logistics support provided, though these factors affected the execution of this level of logistics, not the function itself.

V. Conclusion

This study assessed the role of operational logistics in a war environment and in an operations other than war (OOTW) environment by way of conducting a historical analysis of Desert Storm and humanitarian assistance operations in Somalia. It presented a framework of campaign design elements that allowed a conceptual discussion of how operational logistics was integrated into the operations. Three conclusions stem from the research. One, the warfighting concept of operational logistics is transferrable when supporting certain operations other than war missions. The operational logistics process, and the functions we ascribe to it applies, regardless

of the environment in which it was executed. While this may be due to the hierarchical approach to functions assigned to the various levels of logistics, there is no evidence found indicating this approach is in error. Therefore, from a functional approach, this study supports the idea that the operational level of war is applicable to the OOTW environment.

The second conclusion is the construct of applying campaign design elements as criteria for measuring the integration and application of operational logistics was tested and found to be useful. These elements provide a framework allowing for the integration and synchronization of operational level campaign functions to that of operational logistics. This leads one to suspect these elements can be used in planning, sequencing, evaluating and monitoring operational logistics support to campaigns and major operations. Further, it appears this use of criteria elements can serve as a template for operational logistics efforts both in war and peace, provided the functional aspect of the design element, vice the doctrinal "pure" definition, be considered when applying it to the different environments.

The final implication of this study is it reaffirms that as one progresses up the levels of war, the distinction between strategy and logistics erodes. Additionally, the peculiarities of the OOTW environment, especially as noted in the humanitarian relief efforts conducted in Somalia, are such that logistics may become the principal means of policy. This in turn, offers implications regarding the subordination of logistics to warfighting, whereby warfighting capability support logistics.

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End Notes

¹ The United States Army classifies operations taking place in the lower intensity level environments as *operations other than war* (OOTW). See United States Army, Field Manual 100-5. Operations. (Washington, DC: Headquarters, Department of the Army, 1993), 2-0. Unless noted otherwise, references to FM 100-5 refer to this edition.

² Ibid., 13-0.

³ Ibid.

⁴ United States Army, Field Manual 100-5. Operations. (Washington, DC: Headquarters, Department of the Army, 5 May 1986), pp. 9-11. This division of levels of war is absent in the 1982 version of this manual. This recognition of a division in the levels of war continues in the current FM 100-5. United States Army Training and Doctrine Command (TRADOC) Pamphlet 11-9 further defines these levels in its Blueprint of the Battlefield into functions, which are called operating systems, into a hierarchical structure which are both function and task oriented.

⁵ FM 100-5, pp. 6-1 - 6-2.

⁶ Ibid., p. 6-2.

⁷ Ibid., p. 6-3.

⁸ Ibid., p. 6-2.

⁹ Ibid.

¹⁰ JCS Pub 1-02 defines logistics as "the science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, those aspects of military operations which deal with: a. design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposal of materiel; b. movement, evacuation, and hospitalization of personnel; c. acquisition or construction, maintenance, operation, and disposition of facilities; and d. acquisition or furnishing of services." See Joint Chiefs of Staff, Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms (Washington, DC: United States Government Printing Office, 1 December 1989), p. 211.

¹¹ FM 100-5, 12-3.

¹² William G. Pagonis and Michael D. Krause. Operational Logistics and the Gulf War. (Arlington, Virginia: The Institute of Land Warfare, 1992), p. 4.

¹³ FM 100-5, 12-2.

¹⁴ Carl von Clausewitz, edited and translated by Michael Howard and Peter Paret, On War. (New York: Alfred A. Knopf, 1993), p.95.

¹⁵ Ibid., p.127.

¹⁶ FM 100-5, p.6-2.

¹⁷ United States Army, Field Manual 100-16. Army Operational Support. Final approved draft. (Washington, DC: Headquarters, Department of the Army, 1995), p.3-3.

¹⁸ Chairman, Joint Chiefs of Staff, Joint Publication 4-0. Doctrine For Logistic Support of Joint Operations. Washington, DC: Government Printing Office, 1992, p.II-4.

¹⁹ Clausewitz, On War, p. 88.

²⁰ Ibid., p. 606.

²¹ FM 100-5, p.6-3.

²² United States Army, Field Manual 100-7. Decisive Force: The Army in Theater Operations. Final Approved Draft. (Washington, DC: Headquarters, Department of the Army, 1 February 1995),p.4-1.

²³ FM 100-5, pp.6-2 - 6-3.

²⁴ William W. Mendel, The Campaign Planning Process, US Army Command and General Staff College reprint 91-05058, (Carlisle Barracks, PA: Department of Military Strategy, Planning and Operations, U.S. Army War College, undated), p.3.

²⁵ These elements and major points of discussion are extracted from Pagonis and Krause. Operational Logistics and the Gulf War, pp. 3-4. This is not an all inclusive list of factors to consider. Rather, they are the author's distillation of elements common to several documents describing the campaign planning process. This process is not a science, but is a conceptual and intuitive process linked with operational art. Additional considerations in designing campaigns may be found in FM 100-5, Chapter 6, and in William W. Mendel, The Campaign Planning Process, US Army Command and General Staff College reprint, (Carlisle Barracks, PA: Department of Military Strategy, Planning and Operations, U.S. Army War College, undated)

²⁶ Clausewitz, On War, p. 90.

²⁷ FM 100-5, p. 6-6.

²⁸ Pagonis and Krause. Operational Logistics and the Gulf War, p. 3.

²⁹ FM 100-5, p.2-5.

³⁰ Ibid., and Pagonis and Krause. Operational Logistics and the Gulf War, p. 4.

³¹ Ibid.

³² TRADOC Pam 11-9, pp. 6-4 and 6-6.

³³ Pagonis and Krause. Operational Logistics and the Gulf War, p. 12.

³⁴ There are a number of published sources readers may wish to consult for strategic, operational, tactical, and personal accounts on Desert Shield/Storm. In no particular order, they are; Bob Woodward, The Commanders (New York: Simon and Schuster, 1991), James Blackwell, Thunder In The Desert (New York: Bantam Books, 1991), James Dunnigan and Austin Bay, From Shield To Storm (New York: William Morrow, 1992), Colonel (Retired) Harry Summers, On Strategy II: A Critical Analysis of the Gulf War (New York: Dell Paperback, 1992), U.S. News and World Reports, Triumph Without Victory: The Unreputed History of the Persian Gulf War (New York: Random House-Times Books, 1992), Jeffery Record, Hollow Victory: A Contrary View of the Gulf War (Washington, DC: Brasseys, 1993), Lawrence Freedman and Efraim Karsh, The Gulf Conflict 1990-1991: Diplomacy and War in the New World Order (Princeton, NJ: Princeton University Press, 1991), General Norman Schwarzkopf with Peter Petre, It Doesn't Take A Hero (New York: Bantam, 1992), Rick Atkinson, Crusade: The Untold Story of the Persian Gulf War (Boston: Houghton Mifflin, 1993), Office of the Secretary of Defense, The Conduct of the Persian Gulf War, Final Report to Congress Pursuant to Title V of the Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991 (Public Law 102-25) (Washington, DC: Office of the Secretary of Defense, 1993), General William G. Pagonis with Jeffrey L. Cruikshank, Moving Mountains: Lessons in Leadership and Logistics from the Gulf War (Boston: Harvard Business School Press, 1992), Richard M. Swain, "Lucky War:" Third Army in Desert Storm (Fort Leavenworth, KS: U.S. Army Command and General Staff College Press, 1994), and General Robert H. Scales, Certain Victory: The US Army in the Gulf War (Washington, DC: Office of the Chief of Staff United States Army, 1993).

³⁵ These policy objectives evolved over time from August 1990 to January 1991. See President George Bush. "The Defense of Saudi Arabia," delivered at the White House 8 August 1990, reprinted in Vital Speeches of the Day, Number 56 (1 September 1990), p. 674. Also see Thomas R. Dubois, "The Weinberger Doctrine and the Liberation of Kuwait," Parameters, Volume XXI, Number 4, Winter 1991-1992, pp. 24-38, and Colonel James D. Blundell (Retired). Special Report: Operations Desert Shield and Desert Storm: The Logistics Perspective (Arlington, Virginia: Association of the United States Army, 1991), p. 1.

³⁶ John Lund, Ruth Berg, and Corinne Replogle. Project AIR FORCE Analysis of the Air War in the Gulf: An Assessment of Strategic Airlift Operational Efficiency. Santa Monica, California: Rand, 1993, p. 12.

³⁷ Pagonis and Krause. Operational Logistics and the Gulf War, p. 6.

³⁸ Ibid., p.7.

³⁹ This "minimum essential force" directive was lifted in November when the decision to deploy VII Corps to CENTCOM was made. Additionally, it was proposed that should combat actions become necessary, combat service support units would receive priority for rapid deployment into theater. See Swain, "Lucky War" pp. 31-49 for discussion of this limitation and its affect on deployment of the theater logistic organizations.

⁴⁰ Ibid., p. 43.

⁴¹ Ibid., p.32 and 43.

⁴² Ibid., p.157.

⁴³ Larry H. Addington describes the railroad as the technical innovation which transformed the classical tactics of the 18th century into the operational art we practice today. He described the railroad as the skeletal structure which gave shape to the new view of warfare. See Larry H. Addington. Background to War in the Nineteenth Century (Bloomington: Indiana University Press, 1984), p. 44. Also see James J. Schneider. The Structure of Strategic Revolution: Total War and the Roots of the Soviet Warfare State (Novato, California: Presidio, 1994), pp.33-35 on how the railroad further advanced operational maneuver.

⁴⁴ CENTCOM briefing conducted 28 February 1990 televised by Cable News Network (CNN). Copy of broadcast in author's possession. Also see, Pagonis and Krause. Operational Logistics and the Gulf War, p. 8.

⁴⁵ See Swain, "Lucky War" pp. 75-81 for an overview of the initial planning efforts. See Schwarzkopf, It Doesn't Take a Hero, p. 301 for the general's thoughts regarding the necessity for additional forces to conduct an offensive option achieve the national objective of forcing Iraq to leave Kuwait.

⁴⁶ Pagonis and Krause. Operational Logistics and the Gulf War, p. 8.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ The XVIII Airborne Corps, in particular was malpositioned. Its initial location was as a result of the requirements to support the campaign deter-defend phase. When VII Corps units began arriving in December 1990, they were positioned to the west of XVIII Airborne Corps.

⁵⁰ Pagonis and Cruikshank, Moving Mountains, p. 146.

⁵¹ Pagonis and Krause. Operational Logistics and the Gulf War, p. 9.

⁵² Pagonis and Cruikshank, Moving Mountains, p. 138.

⁵³ Pagonis and Krause. Operational Logistics and the Gulf War, p.8.

⁵⁴ Ibid., p.9. Originally, it was estimated it would take about fourteen days to perform the necessary moves and log base buildup. The increased time it took to perform the necessary logistics functions required the air operations to be conducted longer than originally planned. Therefore, we see another example of how the operational logistics capability affected the timing of the allied scheme of maneuver. Ibid., p.11.

⁵⁵ Pagonis and Cruikshank, Moving Mountains, p. 139-140 remarks that General Schwarzkopf wanted General Pagonis to sign a guarantee that the logistics plan could support the concept of maneuver. Also see Pagonis and Krause. Operational Logistics and the Gulf War, p.9.

⁵⁶ Ibid.

⁵⁷ Few references discuss the use of KKMC during the initial phase of Desert Storm. However, it is likely that by allowing necessary logistic units to establish operations at KKMC facilities, more credibility to a planned supporting attack up the Wadi Al Batin approach could be established. However, only minimal assets could be positioned at KKMC, else, an overly large support structure could telegraph allied intentions further to the west. For a discussion on the log base development in support of the deception, see Pagonis and Krause. Operational Logistics and the Gulf War, p. 11.

⁵⁸ Pagonis and Cruikshank, Moving Mountains, p. 145. By the time the ground offensive started, enough supplies had moved forward to support the two corps with food and water for 29 days, enough fuel to support for 5.2 days of operations, and enough ammunition for at least 45 days. Ibid., p.147.

⁵⁹ Ibid., p.146. General Pagonis relays a story that once visiting this location, the traffic was so heavy, he could not walk across the road, and was forced to fly across the highway to get to the other side.

⁶⁰ Ibid., p.145.

⁶¹ Ibid., p.147.

⁶² Pagonis and Krause. Operational Logistics and the Gulf War, p. 12.

⁶³ Ibid.

⁶⁴ Ibid.

⁶⁵ Ibid.

⁶⁶ Ibid.

⁶⁷ 10th Mountain Division. "Executive Summary Operation Restore Hope," Report On The 10th Mountain Division Lessons Learned Restore Hope, JULLS (22 March 1993), p.10. For a timeline of actions taking place in support of UNOSOM see Walter S. Clarke, Somalia: Background Information for Operation Restore Hope 1992-1993. Carlisle Barracks, Pennsylvania: US Army War College, 1992.

⁶⁸ 10th Mountain Division. "Executive Summary Operation Restore Hope," 10th Mountain Division Lessons Learned Restore Hope, JULLS (22 March 1993), Chapter XI "Transition of Roles and Functions," p.2.

⁶⁹ The UN resolution requested a US led coalition to provide short term security to NGO and UN food distribution operations in order to create a more secure environment for increased UNOSOM participation in ensuring the protection for the delivery and distribution of humanitarian assistance supplies. See J.R. Bolton, "Wrong Turn In Somalia," Foreign Affairs (January/February 1994), p.48.

⁷⁰ From the East Africa Correspondent, "Into Somalia," The Economist. Volume 324, Number 1 (August 1993), p.36.

⁷¹ Major General Waldo D. Freeman, Robert B. Lambert, and Jason D. Mims. "Operation Restore Hope: A US CENTCOM Perspective," Military Review. Volume LXXIII, Number 9 (September 1993), p.61.

⁷² Joseph P. Hoar, "A CINC's Perspective," Joint Force Quarterly, Number 2 (September 1993), p.60.

⁷³ Kaleidoscope: Current World Data (Santa Barbara, California: ABC-Clio, Inc., 1993), p.3.

⁷⁴ Freeman, Lambert, and Mims, "Operation Restore Hope: A USCENTCOM Perspective, p.64.

⁷⁵ Ibid.

⁷⁶ Kaleidoscope: Current World Data, p.3.

⁷⁷ Telephonic interview of LTC (Retired) Brian E. Perrenot, J4, 13th Theater Support Command (Provisional) during Operation Restore Hope. Interview was conducted during 8-11 April 1994. Notes are in author's possession.

⁷⁸ United States Department of Army Center For Army Lessons Learned Restore Hope.

⁷⁹ 10th Mountain Division. 10th Mountain Division Lessons Learned Restore Hope, JULLS, p.68.

⁸⁰ Ibid., p. 36.

⁸¹ Perrenot interview, op. cit.

⁸² Officers of the 1st Force Service Support Group (Forward). "Combat Service Support in Somalia." Marine Corps Gazette, 77, number 11 (November 1993). p.78.

⁸³ Ibid., pp. 78-88. Also see 10th Mountain Division. 10th Mountain Division Lessons Learned Restore Hope, JULLS, p.67.

⁸⁴ Ibid.

⁸⁵ For example, when 10th Mountain Division deployed into the theater, the 710th Main Support Battalion, with minimal transportation assets, operated the Port Support Activity (PSA) at Mogadishu for the reception and onward movement of the division's equipment. Establishing the PSA function is a theater commander's responsibility according to FM 100-17. Ibid., 68.

⁸⁶ The transfer of functions and facilities between the services for situations similar to that in Somalia is mentioned in JCS Pub 4-0. However, it makes the point that the responsibility of conducting this transfer is the responsibility of the CinC. Perhaps some consideration should be given to establishing joint procedures to facilitate this process. See JCS Pub 4-0, p.I-7.

⁸⁷ Perrenot interview, op. cit. This transfer of equipment did not take place as smoothly as one would suspect. Published guidance, by necessity was vague concerning specific items of equipment to transfer. At lower echelons, numerous disagreements arose concerning what items of equipment were to be transferred and how accountability on individual hand receipts was to take place. At the higher echelons, confusion over LIN identification of end items, funding transfer procedures between the services, and differing perception over maintenance standards exacerbated the transfer process. For one example, Army ROWPUs have a single LIN associated with the item, whereas Marine supply procedures establish five LIN-equivalents for their ROWPUs. This created accounting problems in the field as supply personnel at the lower echelons were unaware of each others supply procedures. LTC Perrenot spent several days flying to numerous logistic operations sites to resolve such issues.

⁸⁸ Ibid., p.69.

⁸⁹ Lamont Woody. Coalition Logistics: A Case Study In Operation Restore Hope.

MMAS Thesis (fort Leavenworth, Kansas: US Army Command and General Staff College, 1994), p.65.

⁹⁰ Freeman, Lambert, and Mims, "Operation Restore Hope: A US CENTCOM Perspective," p.66.

⁹¹ Perrenot interview, op. cit.

⁹² ⁹² Freeman, Lambert, and Mims, "Operation Restore Hope: A US CENTCOM Perspective," p.69.

⁹³ 10th Mountain Division. 10th Mountain Division Lessons Learned Restore Hope, JULLS, p.69.

⁹⁴ Ibid.

⁹⁵ Ibid., p.78. There were more than 49 agencies operating in Somalia providing humanitarian relief supplies and services. Many of these organizations operated in Somalia for several years, and probably will continue to do so long after Restore Hope operations are forgotten.

⁹⁶ Ibid., p. 77.

⁹⁷ Perrenot interview, op. cit.

⁹⁸ US Army Armament, Munitions and Chemical Command. "Operation Restore Hope After Action Report," March 1993, pp.18-19. Lamont Woody. Coalition Logistics, pp.81-82.

⁹⁹ Ibid.

¹⁰⁰ General Frederick Franks, Commander, TRADOC, briefing to School of Advanced Military Studies (SAMS), Fort Leavenworth, Kansas on 18 January 1995.

¹⁰¹ Pagonis and Krause. Operational Logistics and the Gulf War, p. 14.

¹⁰² Perrenot interview, op. cit.

¹⁰³ Freeman, Lambert, and Mims, "Operation Restore Hope: A US CENTCOM Perspective, p.61.

¹⁰⁴ FM 100-5, p.12-1.

¹⁰⁵ The J4 was authorized direct tasking authority to logistics units within Somalia. This authority did not extend to combat units. While it is arguable that the J4 could have coordinated required taskings through the J3, it was felt that the volume of taskings to

logistic units would overwhelm the already limited J3 staff. Further, this allowed the J3 to focus on strictly military security operations, a key objective in theater. Perrenot interview, op. cit.

¹⁰⁶ M.I. Laurie. "The Operational Level In Low Intensity Conflict," Low Intensity Conflict and Law Enforcement. Volume 1, Number 3 (Winter 1992), p. 317.